JMI Jurnal Multidisiplin Indonesia
Volume 5 Number 10, October 2026
pp. 2748-2766
E-ISSN: 2964-9048
DOI: 10.58344/jmi.v5i10.3005

The Effect of Benefit Perception, Digital Literacy on the Application of Electronic Medical Records at Bhakti Mulia Hospital with Organizational Culture as a Mediating Variable

Poppy Budiani*, Aprilita Rina Yanti Eff, Sandra Dewi
Universitas Esa Unggul, Indonesia
Email: poppy.budiani@student.esaunggul.ac.id*, aprilita.rinayanti@esaunggul.ac.id, sandra@esaunggul.ac.id

Keywords:
electronic medical records (RME); perception of benefits; digital literacy; organizational culture.

This is an open access article under the CC BY-SA license.

Copyright © 2026 by Author. Published by Riviera Publishing

Abstract

The implementation of electronic medical records (EMRs) at Bhakti Mulia Hospital is essential for improving healthcare service efficiency and effectiveness. However, several challenges remain, including the continued use of manual documentation, incomplete recording of patient handover processes, and inadequate training and evaluation procedures. This study aimed to examine the effects of perceived benefits and digital literacy on EMR implementation, with organizational culture as a mediating variable. A quantitative approach with an explanatory, cross-sectional research design was employed. The study population consisted of 171 nursing personnel, of whom 154 met the inclusion criteria and were included in the analysis using a total sampling approach. Data were analyzed using partial least squares structural equation modeling (PLS-SEM) with SmartPLS version 4. The results indicated that perceived benefits, digital literacy, and organizational culture collectively explained 61.8% of the variance in EMR implementation ($R^2 = 0.618$; $p < 0.001$). Perceived benefits demonstrated the strongest direct effect on EMR implementation, whereas digital literacy did not exhibit a significant direct effect. Organizational culture mediated the relationships between perceived benefits and EMR implementation and between digital literacy and EMR implementation. These findings highlighted the importance of perceived benefits and organizational culture in supporting effective EMR implementation, while digital literacy contributed through its relationship with organizational culture. Therefore, Bhakti Mulia Hospital was advised to strengthen its health information systems, improve staff training and evaluation, and foster a supportive organizational culture to enhance the quality and efficiency of healthcare services.

INTRODUCTION

The national healthcare system is an integral component of national development. Healthcare delivery systems consist of interconnected organizations, resources, and processes designed to provide healthcare services to specific populations (Parsons, 1951; Von Bertalanffy et al., 1968), with hospitals serving as essential components (Zajac et al., 2006). The World Health Organization (WHO) recognizes hospitals as integral parts of broader social and healthcare systems that provide comprehensive healthcare services.

Regulatory theory in healthcare emphasizes the government's role in establishing mandatory standards through regulatory frameworks (Field, 2006). In Indonesia, Law Number 44 of 2009 concerning Hospitals and Minister of Health Regulation Number 82 of 2013 established important legal foundations for implementing Hospital Management Information Systems (Sistem Informasi Manajemen Rumah Sakit, SIMRS). These regulatory requirements

were further strengthened by Minister of Health Regulation Number 24 of 2022 concerning Medical Records, which mandated the transition to electronic medical records (Rekam Medis Elektronik, RME) across healthcare facilities to accelerate the digital transformation of national healthcare services. Path dependency theory explains that technology adoption trajectories are influenced by previous decisions and established infrastructure (Arthur, 1989; North, 1990). Indonesia has experienced varying levels of healthcare digitalization, with some Class A and B hospitals implementing integrated hospital information systems, while numerous Class C, Class D, and regional hospitals continue to rely on partially integrated or manual documentation systems.

Information systems support organizational operations, decision-making, and competitive advantage (Laudon & Laudon, 2020). In hospitals, electronic medical record (EMR) implementation is closely associated with data accuracy, patient flow efficiency, and compliance with medical record regulations. Inadequate EMR implementation may compromise accreditation documentation, healthcare service performance indicators, including patient waiting times, and patient safety. Within healthcare settings, information system implementation involves the systematic application of information technology to manage data, information, and knowledge, thereby supporting clinical practice, decision-making, and improvements in service quality (McGonigle & Mastrian, 2022). Research on nursing informatics and hospital information systems also identifies nursing personnel as primary users of clinical information systems (Hebda et al., 2019; Saba & McCormick, 2021; Tabish, 2024).

Health information systems research and the Human–Organization–Technology Fit (HOT-fit) framework emphasize that successful hospital information system implementation depends on the alignment of technological, human, and organizational factors, including organizational culture, structure, and operational processes (Haux Winter, A., Ammenwerth, E. & Brigl, 2004; Yusof et al., 2006). The Unified Theory of Acceptance and Use of Technology (UTAUT) identifies performance expectancy, effort expectancy, social influence, and facilitating conditions as important determinants of technology acceptance and use (Venkatesh et al., 2003). These concepts are consistent with the Technology Acceptance Model (TAM), which emphasizes perceived usefulness and perceived ease of use in explaining technology acceptance (Venkatesh & Davis, 2000). Perceived usefulness refers to users' beliefs that adopting technology or information systems can improve job performance, productivity, effectiveness, and operational efficiency, thereby encouraging continued technology use (Davis, 1989; Moscati, 2018). Perceived value has also been associated with the adoption of digital healthcare services (Lee & Shin, 2025). However, successful technology implementation also depends on digital literacy and organizational support. Digital literacy encompasses individuals' abilities to access, evaluate, understand, and effectively use information through digital technologies (Gilster, 1997) and is closely associated with information literacy (Bawden & Robinson, 2012; O'Connor et al., 2002). Organizational culture represents a system of shared values, beliefs, and practices that shapes employee behavior (Robbins & Judge, 2020; Schein, 2010; Handy, 1993) and influences organizational effectiveness (Denison & Mishra, 1995). Collectively, perceived usefulness, digital literacy, and organizational culture provide a theoretical foundation for understanding the behavioral and organizational factors influencing EMR implementation. Examining these factors is particularly important because healthcare digitalization requires not only technological infrastructure but also employees' capabilities and organizational readiness.

The transition from manual documentation to computerized information systems has been discussed extensively in previous research (Page, 1968), including studies examining digital transformation in radiology services (Gell, 2001). Research on EMR adoption and implementation readiness has also been conducted across various healthcare settings, including hospitals in Indonesia (Akwaowo Sabi, H. M., Ekpenyong, N., Isiguzo, C. M., Andem, N. F.,

Maduka, O., Dan, E., Umoh, E., Ekpin, V. & Uzoka, 2022; De Benedictis Lettieri, E., Gastaldi, L., Masella, C., Urgu, A. & Tartaglini, 2020; (Faida et al., 2023; Pambudi & Widiyanto, 2025; Saputra et al., 2025). Organizational factors have received increasing attention, particularly the role of organizational culture in hospital information system acceptance (Tabibi et al., 2018) and organizational learning in electronic health record implementation (Argyris, 1974; Argyris & Schön, 1966; Takian et al., 2014).

Bhakti Mulia Hospital is a Class C private hospital operated by PT Jayakarta Medika Bhakti, located on Jalan Aipda K.S. Tubun No. 79, Slipi, Palmerah, West Jakarta. The hospital began implementing EMRs in 2012, and its hospital management information system underwent several modifications, most recently in 2022. Despite these developments, the implementation of SIMRS had not fully achieved the anticipated improvements in operational efficiency, healthcare worker performance, workflow acceleration, or workload reduction. According to the hospital's information technology manager, SIMRS accommodated approximately 90% of the hospital's operational requirements. The nursing manager reported that nurses constituted the largest group of SIMRS users, comprising approximately 171 personnel. However, several implementation challenges remained, including inaccuracies in pharmacy-related system features, continued reliance on manual documentation, repetitive workflows, incomplete integration between hospital units, and limited staff capabilities in computer operation, system navigation, and adaptation to software updates.

A preliminary survey involving interviews with 11 nurses from different hospital units was conducted on March 3–4, 2026. The participants included eight nurses younger than 30 years and three older than 30 years, comprising seven women and four men. Regarding employment duration, seven participants had worked for fewer than five years, while four had worked for more than five years. In terms of educational background, six participants had completed professional nursing education, while five held three-year nursing diplomas (D3 Nursing).

Previous studies have examined the direct effect of digital literacy on technology adoption (Cheng Gearon, E., Hawkins, M., McPhee, C., Hanna, L., Batterham, R. & Osborne, 2022), the relationship between digital literacy and technology adoption mediated by perceived usefulness (Nikou et al., 2022), the influence of digital literacy on perceived usefulness (Brørs et al., 2023), and the effect of organizational culture on technology implementation (M. E. W. Faida, 2024). Although these studies provide valuable insights into technology acceptance and organizational influences, research integrating perceived usefulness and digital literacy as predictors of EMR implementation, with organizational culture as a mediating variable, remains limited, particularly in Class C hospitals. This gap highlights the need for an integrated analytical framework that examines how individual perceptions, digital competencies, and organizational culture interact to influence EMR implementation in medium-sized healthcare institutions.

Based on these organizational challenges and the identified research gap, this study aimed to examine the effects of perceived usefulness and digital literacy on EMR implementation at Bhakti Mulia Hospital, with organizational culture as a mediating variable. Eight hypotheses were formulated: perceived usefulness, digital literacy, and organizational culture collectively influenced EMR implementation (H1); perceived usefulness influenced EMR implementation (H2); digital literacy influenced EMR implementation (H3); perceived usefulness influenced organizational culture (H4); digital literacy influenced organizational culture (H5); organizational culture influenced EMR implementation (H6); organizational culture mediated the relationship between perceived usefulness and EMR implementation (H7); and organizational culture mediated the relationship between digital literacy and EMR implementation (H8). The findings were expected to provide strategic insights for hospital management in optimizing healthcare information systems by strengthening nursing

personnel's digital literacy and fostering an organizational culture supportive of digital transformation.

Theoretically, this study sought to contribute to the integration of technology acceptance frameworks, particularly TAM and UTAUT, with organizational culture theory (Denison Haaland, S. & Goelzer, 2004) in the context of healthcare information systems. By examining organizational culture as a mediating variable, the research aimed to extend understanding of how individual technological perceptions and digital competencies relate to EMR implementation within healthcare organizations. From a practical perspective, the findings were expected to provide evidence-based recommendations for hospital administrators in developing interventions that address technological, behavioral, and organizational barriers to effective EMR use. The study was also intended to benefit hospital management, nursing personnel, policymakers, and researchers interested in healthcare digitalization and the sustainable implementation of clinical information systems.

METHOD

This study was conducted at Bhakti Mulia Hospital in West Jakarta, Indonesia, with data collected from May to June 2026. A quantitative approach with an explanatory, cross-sectional design was employed, using a structured, closed-ended questionnaire. Given the cross-sectional nature of the data, the relationships examined were interpreted as theoretical structural associations rather than evidence of temporal causality (Hair et al., 2022); Sugiyono, 2019). The research model included perceived usefulness (X_1) and digital literacy (X_2) as exogenous variables, organizational culture (Z) as a mediating variable, and electronic medical record (EMR) implementation (Y) as the primary endogenous variable, as illustrated in Figure 1.

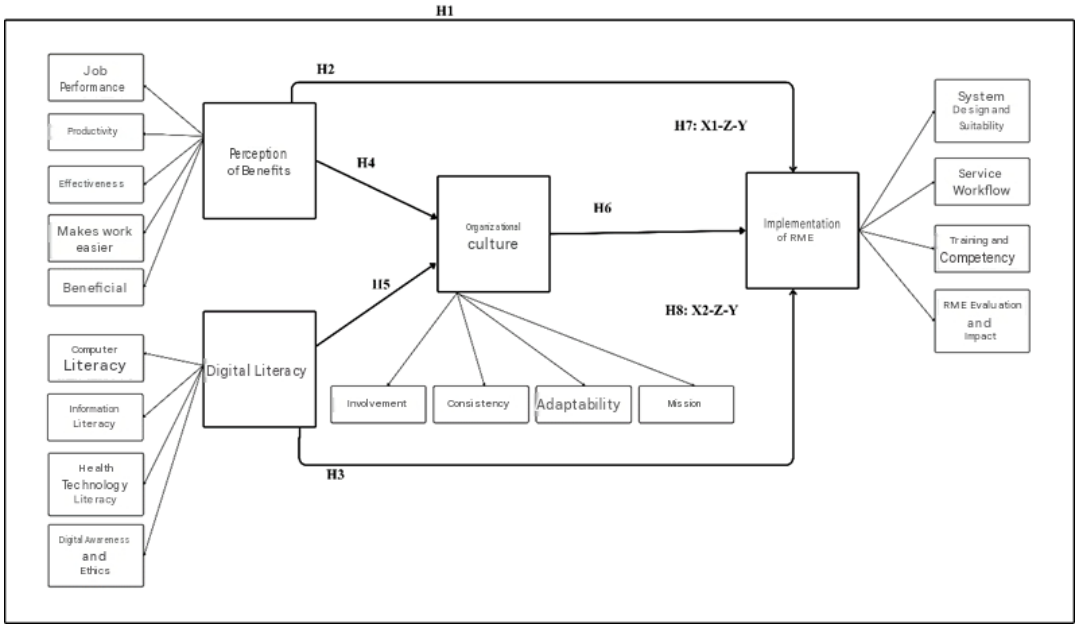


Figure 1. Research Constellation

The structural model consists of two equations. The first equation explains Organizational Culture through Perception of Benefits and Digital Literacy, while the second equation explains the Implementation of RME through Perception of Benefits, Digital Literacy, and Organizational Culture.

$$BO = \gamma_1(PM) + \gamma_2(LD) + \zeta_1$$
$$RME = \beta_1(PM) + \beta_2(LD) + \beta_3(BO) + \zeta_2$$

The affordable population is 171 nursing personnel at Bhakti Mulia Hospital who are involved in the use of the hospital information system. The inclusion criteria include nurses with Nurse Education or D3 Nursing, a working period of at least one year, active working status during the survey, using the hospital information system at work, and willing to be respondents. The sampling technique is total sampling, where all members of the population who meet the criteria are included as respondents (Sugiyono, 2019). A total of 154 nursing personnel (90.1%) met the inclusion and data feasibility criteria, while 17 people (9.9%) did not meet one or more criteria, resulting in a final sample of 154 respondents.

The research instrument is a closed questionnaire (Arikunto, 2018) which consists of 46 statements with a four-level Likert scale without neutral choices so that the tendency of respondents' attitudes is more assertive (Sugiyono, 2019). The answer score is presented in Table 1. Before being analyzed, the data were examined based on the completeness of the answers, the suitability of the scores with the scale range of 1 to 4, the suitability of the respondents' criteria, and the possibility of repeated recording. The final data did not have a blank value so no imputation was carried out.

Table 1. Likert Scale

Answer options	Value
Strongly Disagree (STS)	1
Disagree (TS)	2
Agree (S)	3
Strongly Agree (SS)	4

Source: Primary data that researchers have processed, 2026

The operational definition, dimensions, and number of items of each variable are presented in Table 2. All items were measured using the ordinal Likert scale of 1 to 4.

Table 2. Operational Definition of Research Variables

Variable	Operational definition	Dimensions	Item
Implementation of RME (Y)	The extent to which nurses use RME in their work practice is reflected in the design and suitability of the system, integration into workflows, training and user readiness, and evaluation and impact on the quality of documentation and services (McGonigle & Mastrian, 2022)	System design and suitability; integration into workflows; user training and readiness; evaluation and impact on quality	12
Perceived Benefit (X_1)	Nurses' belief that the use of RME helps improve the speed and performance of work, productivity, effectiveness, ease of task execution, and benefits in daily work (Davis, 1989)	Job performance; productivity; work effectiveness; make work easier; useful	10
Digital Literacy (X_2)	The ability of nursing staff to operate computers, assess digital information, understand technology and health information, and maintain data ethics and security in the use of RME (McGonigle & Mastrian, 2022)	Computer literacy; information literacy; health technology literacy; digital awareness and ethics	8
Organizational Culture (Z)	Nursing staff's perceptions of member involvement, consistency of values and coordination, organizational adaptability, and organizational mission and goals in supporting the work and use of RME (Denison et al., 2004)	Engagement; consistency; adaptability; mission	16

Source: Primary data that researchers have processed, 2026

Data analysis was carried out in two stages, namely descriptive statistical analysis and PLS-SEM. The characteristics of the respondents were presented in frequency and percentage. The tendency of the respondents' answers was analyzed using *the Three Box Method* which converts the frequency of the answers into index values and groups them into low, medium, and high categories (Ferdinand, 2014). The index value is calculated using the following formula, with F_1 to F_4 being the frequency of respondents who choose a score of 1 to 4.

$$\text{Index value} = [(F_1 \times 1) + (F_2 \times 2) + (F_3 \times 3) + (F_4 \times 4)] / 4$$

With 154 respondents, the minimum index was (154 × 1)/4 = 38.50, the maximum index was (154 × 4)/4 = 154.00, and the interval width was (154.00 − 38.50)/3 = 38.50. The index categories are presented in Table 4. The average variable score was obtained from (average index × 4)/154.

Table 3. Category Three Box Method (N = 154)

Index value range	Categories
38,50 – 77,00	Low
> 77.00 – 115.50	Medium
> 115.50 – 154.00	Height

Source: Primary data that researchers have processed, 2026

The PLS-SEM analysis was carried out using SmartPLS 4 because the model involves several latent constructs, direct and indirect relationships, and is oriented towards explanation and prediction; the significance test uses nonparametric *bootstrapping* so that it does not require strict multivariate normality (Hair et al., 2019; Ringle et al., 2024). All constructs are modeled reflectively, so the evaluation of the measurement model (*outer model*) includes convergent validity, discriminant validity, and internal consistency reliability with the criteria in Table 5 (Fornell & Larcker, 1981); Hair et al., 2022).

Table 4. Evaluation Criteria for Measurement Models

Parameters	Criteria
Outer loading	≥ 0.708 is recommended; values of 0.40–0.70 are considered based on AVE, reliability, and theory
Average Variance Extracted (AVE)	≥ 0.50
Cronbach's alpha and rho_C	≥ 0.70
HTMT	< 0.90 and 95% *bootstrap CI* does not contain a value of 1
Fornell-Larcker	The square root of AVE is greater than the correlation between constructs
Cross loading	Loading the highest indicator in its original construct

Source: Primary data that researchers have processed, 2026

The evaluation of the structural model (*inner model*) included *the inner Variance Inflation Factor* (VIF < 5), the R^2 determination coefficient (0.75 strong; 0.50 moderate; 0.25 weak), the size of the f^2 effect (0.02 small; 0.15 medium; 0.35 large), the predictive ability outside the sample using PLSpredict with 10 *folds* and 10 *repetitions* (Shmueli et al., 2019) and *the Cross-Validated Predictive Ability Test* (CVPAT) (Sharma et al., 2023), and model fit using *Standardized Root Mean Square Residual* (SRMR < 0.08) (Hair et al., 2022). Hypothesis testing used *bootstrapping* of 10,000 *subsamples*, *Bias-Corrected and Accelerated* (BCa) methods, *two-tailed testing*, significance level 5%, and 95% confidence interval. H1 was tested using statistical F derived from the R^2 value of RME application with the formula $F = (R^2/k) / [(1 - R^2)/(n - k - 1)]$, with k = 3 predictors and n = 154. Direct influence was declared significant when the p-value was < 0.05 and the 95% BCa confidence interval did not contain

zero. Indirect influence decisions were based on a 95% BCa confidence interval that did not contain zero, while p-values were reported as additional information. Mediation was classified as complementary, competitive, *indirect-only*, *direct-only*, or *no-effect* (Nitzl et al., 2016; Zhao et al., 2010).

RESULTS AND DISCUSSION

Overview of Respondent Locations and Characteristics

Bhakti Mulia Hospital is a class C private public hospital with an area of 5,380 m² and a capacity of 149 beds. Since 2019 the hospital has been managed by PT Jayakarta Medika Bhakti. Bhakti Mulia Hospital has obtained Plenary Accreditation status from the Hospital Accreditation Commission (KARS) and implements a PRIMA (Professionalism, Customer Orientation, Integrity, Effective Communication, and Non-Stop Improvement) work culture. The hospital is supported by 469 employees, including 171 nursing staff spread across polyclinics, emergency rooms, ICUs, operating rooms, hemodialysis, and inpatient units. RME has been used since 2012, with the latest system being used since 2022 to support the recording, management, and reporting of nursing care. The characteristics of the respondents are presented in Table 5.

Table 5. Characteristics of Respondents (N = 154)

Characteristics	Categories	Frequency	Percentage (%)
Age	21–30 years old	119	77,3
	31–40 years	27	17,5
	40–50 years	8	5,2
Gender	Women	127	82,5
	Male	27	17,5
Working period	1–2 years	61	39,6
	3–5 years	53	34,4
	> 5 years	40	26,0
Educational qualifications	Ners	85	55,2
	D3 Nursing	69	44,8

Source: Primary data that researchers have processed, 2026

Based on Table 5, respondents were dominated by the age group of 21–30 years (77.3%) and women (82.5%). A total of 114 respondents (74.0%) had a working period of up to five years, while respondents with a working period of more than five years were still represented (26.0%). Respondents with Nursing education (55.2%) and D3 Nursing (44.8%) had a difference of 10.4 percentage points so that both qualification groups were equally represented.

Evaluation of Measurement Models (Outer Model)

The *outer loading* value of each indicator is presented in Table 6. A total of 45 out of 46 indicators had *an outer loading* value above 0.70. The RME1 indicator has a value of 0.688, very close to the 0.70 limit, and is significant based on *bootstrapping* (t-statistic = 12.297; $p < 0.001$). RME1 is maintained because the RME implementation construct has met the AVE criteria and the reliability and indicators are conceptually relevant.

Table 6. Value of Outer Loading Research Indicators

Indicator	Loading	Indicator	Loading	Indicator	Loading	Indicator	Loading
PM1	0,761	LD1	0,745	RME1	0,688	BO1	0,716
PM2	0,773	LD2	0,780	RME2	0,749	BO2	0,726
PM3	0,796	LD3	0,793	RME3	0,729	BO3	0,732

Indicator	Loading	Indicator	Loading	Indicator	Loading	Indicator	Loading
PM4	0,789	LD4	0,751	RME4	0,787	BO4	0,813
PM5	0,786	LD5	0,814	RME5	0,759	BO5	0,785
PM6	0,824	LD6	0,824	RME6	0,773	BO6	0,803
PM7	0,800	LD7	0,800	RME7	0,752	BO7	0,781
PM8	0,795	LD8	0,746	RME8	0,776	BO8	0,726
PM9	0,820			RME9	0,742	BO9	0,708
PM10	0,774			RME10	0,793	BO10	0,784
				RME11	0,817	BO11	0,805
				RME12	0,708	BO12	0,703
						BO13	0,757
						BO14	0,731
						BO15	0,758
						BO16	0,714

Description: PM = Perception of Benefits; LD = Digital Literacy; RME = Implementation of RME; BO = Organizational Culture. Source: Primary data that has been processed by researchers, 2026

The AVE value and reliability of the construct are presented in Table 7. All constructs have an AVE greater than 0.50, with the highest value in Perception of Benefits (0.627) and lowest in Organizational Culture (0.568), so that each construct is able to explain more than 50% of the variance of the indicator. *Cronbach's alpha* value and rho_C value of the entire construct are above 0.70 so it is declared reliable. The value of the rho_C of Organizational Culture of 0.954 indicates very high internal consistency, but a value slightly exceeding 0.95 can indicate similarity in the content of several indicators so it needs to be considered in interpretation.

Table 7. AVE Values and Construct Reliability

Construct	AVE	Cronbach's alpha	rho_C	Verdict
Implementation of RME	0,573	0,932	0,941	Valid and reliable
Perception of Benefits	0,627	0,934	0,944	Valid and reliable
Digital Literacy	0,612	0,910	0,926	Valid and reliable
Organizational Culture	0,568	0,949	0,954	Valid and reliable

Source: Primary data that researchers have processed, 2026

The results of the discriminant validity test are presented in Table 8, with the Fornell-Larcker criterion value at the bottom of the diagonal and the HTMT value at the top of the diagonal. In the Fornell-Larcker criterion, the correlation between Perceived Benefits and Organizational Culture (0.760) is slightly higher than the AVE root of Organizational Culture (0.753) so that the criteria have not been fully met in the second pair of constructs.

Table 8. Discriminant Validity Test (Fornell-Larcker and HTMT)

Construct	BO	RME	PM	LD
Organizational Culture (BO)	**0,753**	0,780	0,804	0,713
Implementation of RME (RME)	0,734	**0,782**	0,774	0,640
Perceived Benefit (PM)	0,760	0,722	**0,792**	0,827
Digital Literacy (LD)	0,675	0,596	0,775	**0,757**

Remarks: the number of bold numbers on the diagonal = the square root of the AVE; below the diagonal = the correlation between the constructs (Fornell-Larcker); above the diagonal = the HTMT value. Source: Primary data that the researcher has processed, 2026

Based on Table 8, the HTMT value is in the range of 0.640 to 0.827 and is overall smaller than 0.90, with the highest value in the Benefit Perception and Digital Literacy pairs (0.827). The *results of cross loading* also show that each indicator has the highest load on its original construct. With HTMT as the primary evaluation basis, the overall discriminant validity is acceptable, so the measurement model is feasible to proceed to the evaluation of the structural model with all indicators retained.

Descriptive Analysis

The distribution of answers and index values of each item of RME implementation is presented in Table 9. The RME Implementation variable has an average index of 124.64 and an average score of 3.24 so it is in the high category. The highest item is RME6 (129.25), which is the ease of accessing and using information in the RME during patient handover, while the lowest item is RME9 (119.75), which is the ability to utilize the main features of RME independently, which although it is still in the high category, still requires attention.

Table 9. Distribution of Answers and Variable Indexes of RME Implementation

Code	Dimensions	Statement	STS	TS	S	SS	Table of Contents
RME1	System design and suitability	RME features as per nursing documentation requirements	0	2	99	53	128,25
RME2		RME display and navigation make it easy to find patient data	0	4	94	56	128,50
RME3		The speed and performance of RME support the work	0	11	95	48	124,75
RME4	Integration into workflows	Recording through RME is in line with the nursing workflow	0	14	93	47	123,75
RME5		RME facilitates coordination with other health workers	0	4	102	48	126,50
RME6		RME information is easily accessible during patient *handover*	0	3	93	58	129,25
RME7	User training and readiness	Obtain adequate training before using RME	1	19	95	39	120,00
RME8		Have a sufficient understanding of operating an RME	0	23	89	42	120,25
RME9		Able to take advantage of the main features of RME independently	0	20	97	37	119,75
RME10	Evaluation and impact on quality	RME improves completeness and accuracy of documentation	0	9	104	41	123,50
RME11		RME accelerates patient service process	0	7	101	46	125,25
RME12		RME improves patient safety	0	4	106	44	125,50
Average RME Implementation index (high category)							**124,64**

Description: all items are in the high category (> index 115.50). Source: Primary data that has been processed by researchers, 2026

The Benefit Perception variable (Table 10) has an average index of 125.35 and an average score of 3.26 so it is in the high category. The highest item is PM2 (128.25), which is the ease of obtaining patient information faster through RME, while the lowest item is PM4 (123.75), which is the benefit of RME in helping respondents handle work tasks.

Table 10. Distribution of Answers and Index of Benefit Perception Variables

Code	Dimensions	Statement	STS	TS	S	SS	Table of Contents
PM1	Job performance	Get work done faster with RME	0	8	95	51	126,25
PM2		RME makes it easier to get patient information faster	0	6	91	57	128,25
PM3		The use of RME improves service performance	0	8	98	48	125,50
PM4	Productivity	Better able to handle job tasks with RME	0	9	103	42	123,75
PM5		RME reduces wasted time on less productive activities	0	12	95	47	124,25
PM6	Work effectiveness	The use of RME makes work more effective	1	10	96	47	124,25
PM7	Make work easier	RME makes it easier to perform duties as a nurse	1	6	98	49	125,75
PM8		The RME feature is very helpful for the job	1	5	106	42	124,25
PM9	Helpful	RME provides great benefits in daily tasks	0	8	99	47	125,25
PM10		RME is an important tool to support work	0	4	104	46	126,00
Average Benefit Perception Index (high category)							**125,35**

Description: all items are in the high category (> index 115.50). Source: Primary data that has been processed by researchers, 2026

The Digital Literacy variable (Table 11) has an average index of 128.25 and an average score of 3.33 so it is in the high category and is the variable with the highest average index. The highest item is LD2 (132.25), which is the ability to run computer applications in a hospital environment, while the lowest item is LD4 (123.75), which is the ability to evaluate the quality of health information in RME and health portals.

Table 11. Distribution of Answers and Index of Digital Literacy Variables

Code	Dimensions	Statement	STS	TS	S	SS	Table of Contents
LD1	Computer literacy	Able to operate a basic computer (type, save files, email)	0	9	70	75	132,00
LD2		Can run computer applications in a hospital environment	1	5	74	74	132,25
LD3	Information literacy	Able to assess the reliability of digital information sources	1	10	92	51	125,25
LD4		Be able to evaluate the quality of health information in the RME/health portal	1	8	102	43	123,75
LD5	Health technology literacy	Understand digital information in a variety of formats	0	8	90	56	127,50
LD6		Understand the meaning and content of medical information in RME	0	7	93	54	127,25
LD7	Digital awareness and ethics	Recognizing the importance of keeping patient data confidential	0	3	89	62	130,25
LD8		Using digital technology according to hospital rules	0	4	97	53	127,75
Average Digital Literacy index (high category)							**128,25**

Description: all items are in the high category (> index 115.50). Source: Primary data that has been processed by researchers, 2026

The Organizational Culture variable (Table 12) has an average index of 122.93 and an average score of 3.22 so it is in the high category, although it is the lowest average index compared to other variables. The highest item is BO16 (127.00), which is employee alignment in achieving common strategic goals, while the lowest item is BO3 (119.75), which is the authority to take initiative in work.

Table 12. Distribution of Answers and Index of Organizational Culture Variables

Code	Dimensions	Statement	STS	TS	S	SS	Table of Contents
BO1	Engagement	Be involved in decision-making on the use of RME	0	19	94	41	121,00
BO2		The work team functions effectively to achieve common goals	0	7	100	47	125,50
BO3		Have the authority to take the initiative in the work	0	18	101	35	119,75
BO4		Organizations provide opportunities for self-development	0	10	99	45	124,25
BO5	Consistency	Organizational values are clear and consistently applied	0	14	97	43	122,75
BO6		All departments work in harmony with organizational goals	0	14	92	48	124,00
BO7		Organizational systems support stability and regularity of work	0	13	104	37	121,50
BO8		Work behavior reflects organizational values and norms	0	11	106	37	122,00
BO9	Adaptability	Organizations quickly adapt to external changes	0	7	107	40	123,75
BO10		New ideas and innovations are appreciated	0	14	95	45	123,25
BO11		Organizations responsive to patient needs	0	6	106	42	124,50
BO12		Employees are encouraged to learn from mistakes	0	7	105	42	124,25
BO13	Mission	The vision and mission of the organization are clear as work guidelines	0	4	104	46	126,00
BO14		Understand the role and contribution of work to organizational goals	0	5	99	50	126,75
BO15		Long-term goals are well communicated	0	6	105	43	124,75
BO16		All employees work in harmony to achieve strategic goals	0	3	102	49	127,00
Average Organizational Culture index (high category)							**122,93**

Description: all items are in the high category (> index 115.50). Source: Primary data that has been processed by researchers, 2026

The recapitulation of the descriptive results in Table 13 shows that all four variables are in the high category. In the RME Implementation, the dimensions of training and user readiness received the lowest relative score, while in Organizational Culture, the aspects of involvement and authority to take the initiative received a relatively lower assessment. These findings show that although the implementation of RME and work culture has gone well, user assistance and nurses' active participation space still need to be continuously strengthened.

Table 13. Recapitulation of Variable Data Description Results

Variable	Number of Points	Average index	Average score	Categories	Dominant behavior
Implementation of RME	12	124,64	3,24	Height	Effective
Perception of Benefits	10	125,35	3,26	Height	Interpretation
Digital Literacy	8	128,25	3,33	Height	Talk
Organizational Culture	16	122,93	3,22	Height	Ethos

Source: Primary data that researchers have processed, 2026

Evaluation of Structural Models (Inner Model)

The results of the PLS-SEM model estimation containing *the outer loading* value, path coefficient, and R^2 are presented in Figure 2.

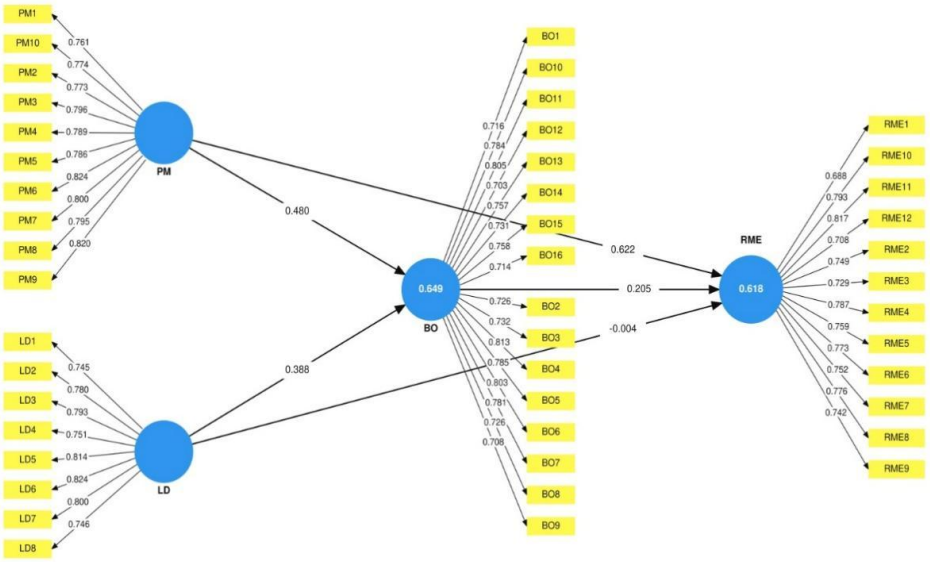


Figure 2. PLS-SEM Model Estimation Results
Source: Primary data that researchers have processed, 2026

The R^2 value in Table 14 shows that Benefit Perception and Digital Literacy explain 64.9% of the variation in Organizational Culture, while the Benefit Perception, Digital Literacy, and Organizational Culture explain 61.8% of the variation in RME Implementation. Both values belong to the moderate category.

Table 14. R-Square Values

Endogenous variable	R-square	Adjusted R-square	Categories
Organizational Culture	0,649	0,645	Moderate
Implementation of RME	0,618	0,611	Moderate

Source: Primary data that researchers have processed, 2026

The results of the collinearity test and effect size are presented in Table 15. All *internal* VIF values were below 5, with the highest value in the relationship of Organizational Culture to RME Implementation (2.852), so that the model was free from critical collinearity problems. Benefit Perception of RME Implementation had the largest effect size (0.369; large). Benefit Perception and Digital Literacy had a moderate effect on Organizational Culture (0.315 and

0.205), Organizational Culture had a small effect on RME Implementation (0.039), while Digital Literacy did not have a significant direct effect on RME Implementation (0.000).

Table 15. Inner VIF and Effect Size (f-Square) Test Results

Relationships	VIVID	VIF Results (< 5)	F-Square	Categories of effects
Perceptions of Organizational Culture → Values	2,089	Meet	0,315	Medium
Digital Literacy → Organizational Culture	2,089	Meet	0,205	Medium
Perception of Benefits → Implementation of RME	2,746	Meet	0,369	Large
Digital Literacy → the Implementation of RME	2,518	Meet	0,000	None
Organizational Culture → Implementation of RME	2,852	Meet	0,039	Small

Source: Primary data that researchers have processed, 2026

The PLSpredict results in Table 16 show a Q^2predict value of Organizational Culture of 0.632 and Implementation of RME of 0.589, both greater than zero so that the model has predictive relevance. At the indicator level, all 28 indicators of Organizational Culture and RME Implementation had a positive Q^2predict, and the RMSE PLS-SEM was lower than the linear model in 26 of the 28 indicators; the two indicators with a higher RMSE PLS-SEM were BO3 and RME6. Thus, the model has moderate predictive capabilities.

Table 16. PLSpredict Results Summary

Endogenous constructs	Q^2predict	RMSE	MAE	Conclusion
Organizational Culture	0,632	0,615	0,442	Predictive relevance
Implementation of RME	0,589	0,651	0,474	Predictive relevance

Source: Primary data that researchers have processed, 2026

The CVPAT results in Table 18 show that all the differences *in losses* are negative and significant ($p < 0.001$), so that PLS-SEM produces a lower loss than *the average* (IA) and *linear model* (LM) indicators. In addition, the SRMR value in the *saturated model* and *the estimated model* are both 0.066 (< 0.08) so that the model meets the match criteria.

Table 17. Results of the Cross-Validated Predictive Ability Test (CVPAT)

Construct	PLS–IA loss difference	p-value	PLS–LM loss difference	p-value	Conclusion
Organizational Culture	−0.106	< 0.001	−0.026	< 0.001	Better
Implementation of RME	−0.104	< 0.001	−0.036	< 0.001	Better
Overall	−0.105	< 0.001	−0.030	< 0.001	Better

Source: Primary data that researchers have processed, 2026

Hypothesis Testing

Simultaneous testing (H1) using R^2 RME implementation before rounding (0.618273), k = 3, and n = 154 so that F = (0.618273/3) / [(1 – 0.618273)/(154 – 3 – 1)] = 80.984. The results in Table 19 show that Benefit Perception, Digital Literacy, and Organizational Culture simultaneously have a significant effect on RME Implementation so that H1 is accepted. This simultaneous significance does not mean that each predictor must be individually significant.

Table 18. Simultaneous Influence Test Results

Hypothesis	R-square	F (df1; df2)	p-value	Verdict
H1	0,618	80,984 (3; 150)	< 0.001	Accepted

Source: Primary data that researchers have processed, 2026

The results of the direct influence test are presented in Table 20. Benefit Perception had a positive and significant effect on the implementation of RME (β = 0.622; t = 6.956; p < 0.001; CI 0.429–0.781) so that H2 was accepted. Digital Literacy did not have a significant direct effect on the implementation of RME (β = −0.004; t = 0.047; p = 0.963; CI −0.172–0.174) so that H3 was rejected. Benefit Perception (β = 0.480; p < 0.001) and Digital Literacy (β = 0.388; p < 0.001) had a positive and significant effect on Organizational Culture so that H4 and H5 were accepted. Organizational Culture had a positive and significant effect on RME Implementation (β = 0.205; t = 2.162; p = 0.031; CI 0.029–0.403) until H6 was accepted.

Table 19. Direct Influence Test Results

Hypothesis	Relationships	Coefficients	t-statistic	p-value	95% CI BCa	Verdict
H2	PM → RME	0,622	6,956	< 0.001	0,429 – 0,781	Accepted
H3	LD → RME	−0.004	0,047	0,963	−0.172 – 0.174	Rejected
H4	PM → BO	0,480	5,292	< 0.001	0,295 – 0,652	Accepted
H5	LD → BO	0,388	4,267	< 0.001	0,203 – 0,559	Accepted
H6	BO → RME	0,205	2,162	0,031	0,029 – 0,403	Accepted

Source: Primary data that researchers have processed, 2026

The results of the indirect influence test are presented in Table 20. Indirect effect of Perceived Benefits on the Implementation of RME through Organizational Culture was 0.099 (0.480 × 0.205) with a CI BCa of 95% 0.015–0.227 which did not contain zero so that H7 was accepted; because the direct influence was also positive and significant, the role of Organizational Culture was classified as partial complementary mediation. The indirect influence of Digital Literacy on the Implementation of RME through Organizational Culture was 0.080 (0.388 × 0.205) with a CI of 0.016–0.179 so that H8 was accepted; because the direct influence was not significant, the role of Organizational Culture was classified as *indirect-only* mediation. The SmartPLS output showed a p-value of 0.0648 on H7 and 0.0505 on H8; the value was reported transparently, but the mediation decision was based on a 95% BCa CI because the BCa method adjusted for the bias and asymmetry of *the indirect effect bootstrap* distribution.

Table 20. Indirect Influence Test Results

Hypothesis	Relationships	Coefficients	t-statistic	p-value	95% CI BCa	Types of mediation	Verdict
H7	PM → BO → RME	0,099	1,847	0,0648	0,015 – 0,227	Partial complement	Accepted
H8	LD → BO → RME	0,080	1,956	0,0505	0,016 – 0,179	*Indirect-only* (full)	Accepted

Source: Primary data that researchers have processed, 2026

Overall, of the eight hypotheses tested, seven hypotheses were accepted (H1, H2, H4, H5, H6, H7, and H8) and one hypothesis was rejected (H3). The final model of the study is presented in Figure 3.

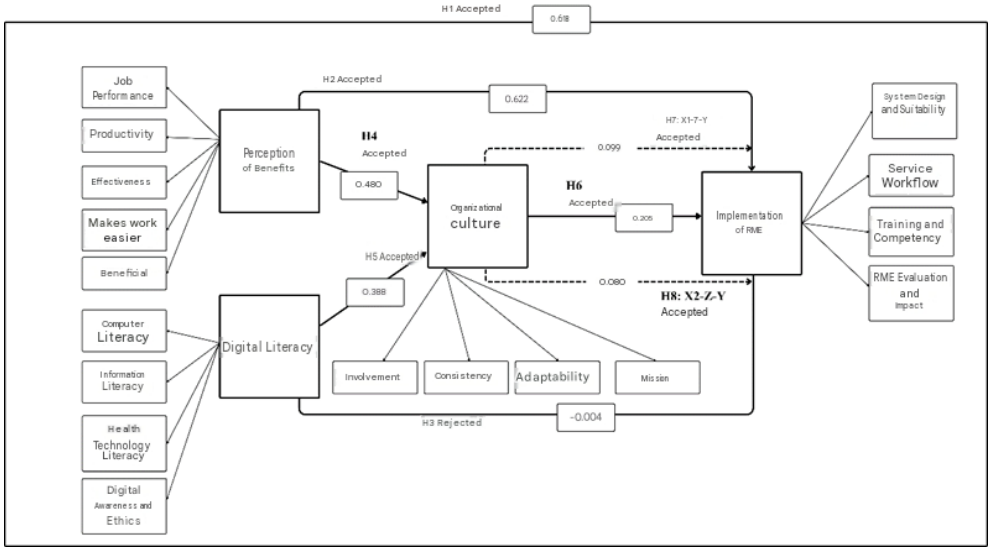


Figure 3. Final Model of Research
Source: Primary data that researchers have processed, 2026

The Simultaneous Influence of Benefit Perception, Digital Literacy, and Organizational Culture on the Implementation of RME (H1)

Perception of Benefits, Digital Literacy, and Organizational Culture simultaneously had a significant effect on the implementation of RME and together explained 61.8% of the variation. The results *of the Three Box Method* showed that the four variables were in the high category with all dimensions also in the high category. The belief that RME makes work easier, the ability to run applications, and the support and appreciation of management together optimize the implementation of RME. This finding is in line with the HOT-fit framework and *Health Information System* that the success of hospital information systems is determined by the suitability of human, organizational, and technological elements (Haux et al., 2004; Yusof et al., 2006), so that the success of the implementation of RME is not enough to rely solely on the availability of devices or applications.

The Effect of Benefit Perception on the Implementation of RME (H2)

Benefit Perception had a positive and significant effect on the implementation of RME with the largest path coefficient (0.622) and effect size (0.369) in the model. Benefit Perception and RME Implementation were both in the high category, with the most prominent benefit being the speed of obtaining patient information. This means that nurses' belief that RME improves job performance is followed by more effective interunit coordination and more optimal implementation of RME. This result is in line with the concept of benefit perception in *the Technology Acceptance Model* which emphasizes personal beliefs that the use of the system has a positive impact on work performance (Davis, 1989; Venkatesh & Davis, 2000) as well as the concept of attitudes towards the use formed from cognitive, affective, and conative components (Ajzen, 2005).

The Influence of Digital Literacy on the Implementation of RME (H3)

Digital literacy does not have a significant direct effect on the implementation of RME, although both variables are in the high category. These results do not mean that digital literacy is not important; the ability to operate computers, understand digital information, and maintain data security remains the foundation of health information systems (McGonigle & Mastrian, 2022; Wibawa et al., 2024). One possible explanation is that the level of digital literacy of respondents is generally high and relatively homogeneous, as 77.3% of respondents aged 21–30 years generally have good digital skills, so the variation in ability is not large enough to explain the variation in the implementation of RME. This explanation needs to be interpreted

carefully because the homogeneity of the score was not specifically tested. Digital literacy remains relevant for 22.7% of nurses over 30 years old, which is in line with a preliminary survey that 27% of nurses experience digital literacy barriers and 3 out of 11 informants are over 30 years old.

The Effect of Perception of Benefits and Digital Literacy on Organizational Culture (H4 and H5)

Perception of Benefits (0.480) and Digital Literacy (0.388) had a positive and significant effect on Organizational Culture with a moderate effect size. Positive experiences of the benefits of RME and nurses' digital capabilities were related to a stronger organizational culture in engagement, consistency, adaptability, and mission. The belief that RME is an important tool in work and adequate digital capabilities support nurses to apply values according to applicable rules and support the achievement of organizational goals at Bhakti Mulia Hospital (McGonigle & Mastrian, 2022).

The Influence of Organizational Culture on the Implementation of RME (H6)

Organizational culture has a positive and significant effect on the implementation of RME, but it is the weakest direct influence with a small effect size (0.039). Sense of involvement, consistency in carrying out procedures, ability to adapt to digital systems, and understanding of organizational mission are related to the implementation of more optimal RME. These findings strengthen the theory of organizational culture Denison et al. (2004) who view work culture as an operational action based on core values that are aligned with the achievement of organizational goals through the dimensions of involvement, consistency, adaptability, and mission, as well as the finding that organizational culture plays a role in the acceptance of hospital information systems (Tabibi et al., 2018).

The Role of Organizational Culture Mediation (H7 and H8)

Organizational Culture partially mediates the influence of Benefit Perception on the Implementation of RME. This condition is in line with the concept *of complementary mediation*, which is when the direct and indirect influences are both significant and unidirectional (Zhao et al., 2010). The benefits of RME that the dominant nurses perceive are directly related to the implementation of RME, but are also partially channeled through the organizational culture; understanding the contribution of work to organizational goals reinforces the belief that RME is important and encourages more optimal inter-unit coordination.

Organizational Culture also mediates the influence of Digital Literacy on the implementation of RME in the form of *indirect-only* mediation. These findings show that digital literacy does not automatically increase the implementation of RME, but only has a real impact when channeled through strengthening mechanisms in the organization, such as effective teamwork, learning, mentoring, and leadership support. In other words, nurses' digital proficiency requires a conducive ecosystem and organizational culture to escalate into optimal RME use behavior, especially for nurses with low to moderate digital literacy skills. The RME application, which has been used for four years with regular version updates, makes it easier for respondents with good digital literacy, but can hinder respondents with low digital adaptation, so that organizational support becomes an important gap for managerial implications.

Managerial Implications and Research Limitations

Managerially, RME has not been able to completely eliminate repetitive workflows that have the potential to cause inefficiencies in working hours, and management needs to re-evaluate the RME flow. It is not enough for hospitals to rely only on computer literacy training, but it is necessary to build an organizational culture that strengthens cooperation between units as a bridge between digital literacy and the implementation of RME. This study has limitations, namely *a cross-sectional design* that limits data collection at a certain time, subjects that are

limited to nursing personnel in one hospital according to inclusion criteria, the use of questionnaires that rely on the subjective perception of respondents, a limited number of variables, and the use of preliminary interviews as supporting data.

CONCLUSION

This study concluded that perceived usefulness, digital literacy, and organizational culture collectively had a significant effect on electronic medical record (EMR) implementation among nursing personnel at Bhakti Mulia Hospital. Perceived usefulness emerged as the strongest direct predictor of EMR implementation and positively influenced organizational culture. Digital literacy did not demonstrate a significant direct effect on EMR implementation but positively influenced organizational culture. Organizational culture had a positive, albeit small, effect on EMR implementation and served as a complementary partial mediator of the relationship between perceived usefulness and EMR implementation. Furthermore, organizational culture demonstrated indirect-only mediation in the relationship between digital literacy and EMR implementation, indicating that nurses' digital competencies were associated with EMR implementation primarily through a supportive organizational culture. Based on these findings, hospital management was advised to prioritize improvements in the perceived usefulness of EMRs by introducing digital task management boards displaying task status (To Do, In Progress, and Done) and real-time productivity indicators at nursing stations. Management was also encouraged to reinforce the alignment between nursing activities and organizational objectives through regular EMR evaluation meetings and training sessions. Digital literacy training should prioritize nurses with low to moderate digital competencies, incorporating patient data protection, information security, and ethical technology use. Organizational support should be strengthened through team-based training, recognition of employee suggestions, peer mentoring between digitally proficient nurses and those requiring additional support, and simulations of digital nursing workflows from admission to discharge. Future research should employ longitudinal designs, include multiple hospitals and healthcare professions, increase sample sizes, and examine additional factors such as system quality, information quality, perceived ease of use, technical support, workload, and user satisfaction to provide a more comprehensive understanding of EMR implementation.

FUNDING

This research does not receive special funding from government agencies, private organizations, or other funding institutions.

CONFLICT OF INTEREST

The authors state that there is no conflict of interest related to the implementation of research, preparation, or publication of this article.

AUTHOR'S CONTRIBUTION

All authors contributed to the preparation of this article. Poppy Budiani, Aprilita Rina Yanti Eff, and Sandra Dewi are responsible for the conceptualization of the research, data collection and analysis, interpretation of results, and preparation of manuscripts. Other authors contributed to the review, editing, and final approval of the manuscript.

REFERENCES

Akwaowo Sabi, H. M., Ekpenyong, N., Isiguzo, C. M., Andem, N. F., Maduka, O., Dan, E., Umoh, E., Ekpin, V., C. D., & Uzoka, F.-M. (2022). *Adoption of electronic medical records in developing countries—A multi-state study of the Nigerian healthcare system*. https://doi.org/10.3389/fdgth.2022.1017231

Arikunto, S. (2018). *Research Procedure: A Practical Approach* (6th ed.). Rineka Cipta.

Arthur, W. B. (1989). Competing Technologies, Increasing Returns, and Lock-In by Historical Events. *The Economic Journal*, *99*(394). https://doi.org/10.2307/2234208

Bawden, D., & Robinson, L. (2012). *Introduction to Information Science*. Facet Publishing. https://books.google.co.id/books?id=Nc5qDQAAQBAJ

Brørs, G., Larsen, M. H., Hølvold, L. B., & Wahl, A. K. (2023). eHealth literacy among hospital health care providers: a systematic review. *BMC Health Services Research*, *23*(1). https://doi.org/10.1186/s12913-023-10103-8

Cheng Gearon, E., Hawkins, M., McPhee, C., Hanna, L., Batterham, R., C., & Osborne, R. H. (2022). *Digital Health Literacy as a Predictor of Awareness, Engagement, and Use of a National Web-Based Personal Health Record: Population-Based Survey Study*. https://doi.org/10.2196/35772

Davis, F. D. (1989). *Perceived usefulness, perceived ease of use, and user acceptance of information technology*. https://doi.org/10.2307/249008

De Benedictis Lettieri, E., Gastaldi, L., Masella, C., Urgu, A., A., & Tartaglini, D. (2020). *Electronic Medical Records implementation in hospital: An empirical investigation of individual and organizational determinants*. https://doi.org/10.1371/journal.pone.0234108

Denison Haaland, S., D. R., & Goelzer, P. (2004). *Corporate culture and organizational effectiveness: Is Asia different from the rest of the world? Organizational Dynamics, 33(1), 98–109*. https://doi.org/10.1016/j.orgdyn.2003.11.008

Denison, D. R., Haaland, S., & Goelzer, P. (2004). Corporate culture and organizational effectiveness: Is Asia different from the rest of the world? *Organizational Dynamics*, *33*(1). https://doi.org/10.1016/j.orgdyn.2003.11.008

Denison, D. R., & Mishra, A. K. (1995). Toward a Theory of Organizational Culture and Effectiveness. *Organization Science*, *6*(2). https://doi.org/10.1287/orsc.6.2.204

Faida, E. W., Wiliyanarti, P. F., & Wahyuni, M. M. dwi. (2023). Readiness Analysis of Electronic Medical Record System (RME): A Case Study of Secondary Hospitals in Surabaya. *Health and Technology Journal (HTechJ)*, *1*(5).

Faida, M. E. W. (2024). *Textbook for Health Service Management in Hospitals*. Indomedia Pustaka.

Ferdinand, A. (2014). *Management Research Methods: Research Guidelines for Writing Thesis and Dissertation in Management Science*. Dipenogoro University Press.

Field, R. I. (2006). *Health Care Regulation in America*. https://doi.org/10.1093/acprof:oso/9780195159684.001.0001

Fornell, C., & Larcker, D. F. (1981). *Evaluating Structural Equation Models with Unobservable Variables and Measurement Error*. https://doi.org/10.2307/3151312

Gell, G. (2001). Digital (r) Evolution in Radiology (Walter Hruby, ed, Springer-Verlag/Wien, 2001). *AJNR: American Journal of Neuroradiology*, *22*(8). https://pmc.ncbi.nlm.nih.gov/articles/PMC7974577/

Gilster, P. (1997). *Digital literacy*. Wiley Computer.

Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2022). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (3rd ed.). Sage Publications.

Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European Business Review*, *31*(1), 2–24. https://doi.org/10.1108/EBR-11-2018-0203

Handy, C. (1993). *Understanding Organizations: Managing Differentiation and Integration*. Oxford University Press.

Haux Winter, A., Ammenwerth, E., R., & Brigl, B. (2004). *Strategic Information Management in Hospitals*. https://doi.org/10.1007/978-1-4757-4298-5

Hebda, T., Hunter, K., & Czar, P. (2019). *Handbook of Informatics for Nurses and Healthcare Professionals* (6th ed.). Pearson. https://www.pearsoned.com/

Laudon, K. C., & Laudon, J. P. (2020). *Management Information Systems: Managing the Digital Firm* (16th ed.). Pearson.